

Field key to the lycaenid butterflies of the Top End and Kimberley

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Abstract

A set of keys are presented for identification of the 41 species of lycaenid butterfly known to occur in the monsoonal Kimberley and Top End regions of north-western Australia. The key is designed for use in the field and to complement the field guide of Braby (2004).

Introduction

The distribution of butterfly species in the remoter parts of Australia remains poorly known despite a long tradition of collecting and study by amateur and professional entomologists (Moulds 1999). In the monsoonal (wet-dry) tropics of north-western Australia (Kimberley and Top End), most studies and collections are from the relatively accessible Darwin–Kakadu–Katherine area (Dunn & Dunn 1991; Moulds 1999; Meyer *et al.* 2006). Even there, studies of regional faunas are scant and mostly the work of visiting lepidopterists (Angel 1951; Le Souef 1971; Meyer 1996). Outside this limited geographic region, the only substantial, published regional studies are those of Tindale (1923) for Groote Eylandt and Hutchinson (1978) for the Daly River. The recent discovery of a new species of ant-blue, *Acrodipsas decima* (Miller & Lanc 2004), and the ease with which extensions to known distributions continue to be made (Field 1990a,b; Yeates 1990; Johnson 1993; Meyer & Wilson 1995; Grund 1996, 1998; Meyer 1996; Johnson & Valentine 1997, 2004; Grund & Hunt 2001; Franklin *et al.* 2005; Williams *et al.* 2006; Franklin 2007) highlight that much remains to be learnt.

Publication of two reference volumes and their companion field guide (Braby 2000, 2004) has made identification and survey of butterflies easier. However, the number of species to be considered can be challenging, and there is a scarcity of regional information about the distribution, habitat, food plants and habits of species to provide context for records. In this paper, we provide a key to adults of the 41 species of 'blues' (Lycaenidae) of monsoonal north-western Australia. It is designed for use in the field to complement Braby (2000, 2004). The key incorporates information presented by Braby (2000) and has been extensively tested and refined in the field.

Recognising a lycaenid

Lycaenids are generally delicate, small to medium-sized butterflies (Figure 1) of which many have iridescent or pastel shades of blue, lilac or purple on the upperside of the wings. A typical small 'blue' is among the smallest of butterflies. It has rounded wings, the undersides of which are finely barred and spotted pale brown. Close examination may reveal delicate, almost filamentous tails several millimetres long and black spots, edged or ringed orange, adjacent to the tail on the hindwing underside. Most 'blues' fly low amongst grass and herbs, or dash around bushes at eye level. However, though many species broadly fit this description, a similar number do not. The pastel or iridescent blues may be reduced to panels within a predominance of dull brown, or be replaced altogether by dull brown, vivid orange or white. They may be larger and fly high in the treetops; tails may be absent or broad, and the sub-terminal hindwing spots may also be absent. Indeed, it is difficult to formally characterise the family in a simple manner, and the features that distinguish the family are mostly technical in nature (see Braby 2000 for details).



Figure 1. The Spotted Pea-blue *Euchryops cnejus*, a typical small 'blue' (family Lycaenidae). Note the delicate tails and two prominent black sub-terminal spots on the underside of the hindwing. (Don Franklin)

For those unfamiliar with butterfly families, there is no better starting point than to match pictures to your observations. You may not be able to identify your butterfly to the level of species, but you will soon recognise a butterfly as a lycaenid with ease – and be ready to use this key.

The lycaenid fauna of the Top End and Kimberley

The key covers all species known to occur in monsoonal north-western Australia: the Kimberley region of Western Australia (WA) and the Top End of the Northern Territory (NT). The region extends from the north coast of these states (including offshore islands) southwards to c. 17–18° South, the southern limit defined here as being from Broome through Fitzroy Crossing and Halls Creek (WA), and from Kalkarindji, Dunmarra and Cape Crawford to Wollongorang (NT). The area receives monsoonal rainfall annually, with over 90% of rain falling between November and April inclusive. Maximum temperatures are high throughout the year (McDonald & McAlpine 1991; Cook & Heerdegen 2001). Though vast tracts of wooded savannas dominate the landscape, vine-thickets, riparian forests, spring-fed rainforests, wetlands, lancewood (*Acacia shirleyi*) thickets and grasslands occur within the savanna matrix, and open forests and mangroves are common in the north (Fox *et al.* 2001).

The known lycaenid fauna of the region comprises 41 species (Grund 1996; Braby 2000; Miller & Lane 2004). We have not included the Bright Cornelian *Deudorix dioris*, whose occurrence in the study area is questionable (M.F. Braby, pers. comm.).

As is the case for Australia generally, the Lycaenidae are the most speciose butterfly family in monsoonal north-western Australia. Kitching and Dunn (1999) identified a latitudinal gradient in species richness within the region that is positively correlated with rainfall; diversity is greatest around Darwin, the Tiwi Islands and Cobourg Peninsula in the Northern Territory with more than 30 species, and lowest inland with about half that number. However, the gradient may be less steep than suggested because the Darwin area is well surveyed whereas most inland areas, along with Arnhem Land, are not. The Kimberley fauna is for the most part a sub-set of that of the Top End, though further surveys may reveal additional species. However, two species – the Kimberley Spotted Opal *Nesolycaena caesia* and the Bitter-bush Blue *Theclinesstes albocincta* – have been recorded in the Kimberley but not from the Top End.

Using the field key

The key is designed for identification of adults using binoculars or a hand lens to examine netted individuals. It consists of a key to major groups followed by a key to each group. Keys consist of couplets and triplets arranged to form multiple-choice pathways leading to species. The groups and subsequent divisions are practical arrangements and do not necessarily correspond with systematic relationships. Nevertheless, where compatible with the primary aim, we have grouped congeners. Similarly, for the most part we have kept the sexes and seasonal morphs of a species together.

Sketches are provided to enhance some identifications, but we have generally avoided illustrating species as this duplicates information available in Braby (2004). Where it is likely to enhance the identification process, information on habits, habitat and geography is sparingly included.

We have made every effort to keep the terminology employed simple so that both experienced entomologists and new-comers to the identification of butterflies may make use of the key. We use the term 'tail' to describe any projection from the hindwing whether broad or slender, long or short, including tornal lobes (projections at the tornus, the bottom corner of the hindwing). Where the characteristics of the tail are useful for identification, we describe them.

Size is one of the more problematic characters employed in field identification because of variation among individuals, yet to ignore it completely would be to ignore a character that is at times most useful. We have kept its use to a minimum and employed it mostly where the differences are great. Sizes are presented as average wingspans, taken from Braby (2000), and as forewing length, measured as a straight line from the base of the leading edge to the apex (Figure 2). Wingspans generally cannot be measured in the field, but forewing length can. However, the temptation to treat measurements as fixed values should be avoided. Many species vary considerably in size. The forewing lengths presented are for the most part based on the regression presented in Figure 3 applied to wingspan measurements in Braby (2000), with some allowance ($\pm 1-2$ mm) for variation. For a few species, we have relied directly on forewing measurements of museum specimens.

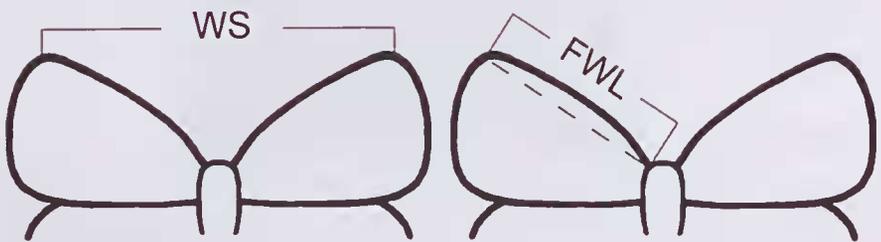


Figure 2. Wingspan (WS) and forewing length (FWL) in butterflies. Note that WS is measured with the trailing edge (dorsum) perpendicular to the body, a position usually only available in set specimens, but FWL can be measured on netted live individuals.

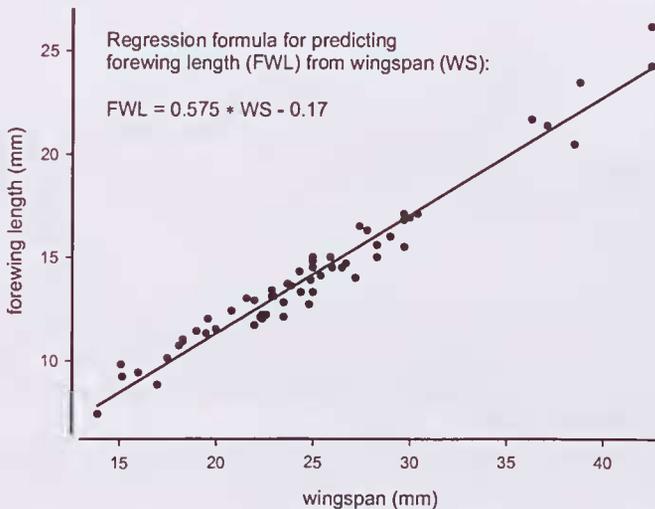


Figure 3. Relationship between forewing length (FWL) and wingspan (WS) for lycaenid butterflies based on 58 individuals of 22 species. Measurements were made with vernier callipers to 0.1 mm using individuals from the collection of the Museum and Art Gallery of the Northern Territory (NTM) mounted flat and with the forewing dorsum perpendicular to the body.

In making an identification, we cannot stress sufficiently the need for self-critical rigour. In particular, caution is needed to recognise and interpret wear. Colours fade and markings become less obvious with age. Areas of the hindwing often critical for identification – tails and sub-terminal hindwing spots – are particularly susceptible to damage. Iridescent scales within sub-terminal hindwing spots – a key character for a number of species – can wear to obscurity. For these reasons, some worn individuals cannot be identified using the key. In addition, differences between the sexes are not always represented in the keys. A further caution is that the regional lycaenid fauna has quite likely not been fully documented, so additional species may be encountered. However, we suspect such discoveries will be rare and noteworthy events.

The taxonomy and nomenclature employed, including common names, follows Braby (2004) with three exceptions: 1. the population of the Black Ant-blue *Acrodipsas birtipes* reported from the Top End by Braby (2000) was excluded from Braby (2004) and is now known as *A. decima* (Miller & Lane 2004); 2. the Purple Oak-blue, formerly *Arhopala centaurus*, is now known as *A. eupolis* (Vane-Wright & Gaonkar 2006); and 3. subspecies of the Satin Azure *Ogyris amaryllis* within the study area are no longer distinguished (Schmidt & Hughes 2006).

The keys

Abbreviations: WS = wingspan, FWL = forewing length
 > = greater than, < = less than, \approx = about (*circa*)
 NT = Northern Territory, WA = Western Australia

Number in brackets after species refer to the page number in Braby (2004). Dashed lines on the illustrations indicate the position of the wing not under consideration.

Key to groups

1. - small or very small butterflies (WS 14–32 mm, FWL 7–18 mm) (many species associated with the ground layer, though some are arboreal) 2
 - medium-sized butterflies (WS 32–47 mm, FWL 18–30 mm) (mostly arboreal) 6
 - large butterfly (WS > 65 mm; FWL > 36 mm) (thick-bodied; orange and brown-black above) **Moth Butterfly *Liphyra brassolis*** (204)
2. - underside of hindwing with numerous red spots coalescing to form prominent bands **Group A** (jewels, genus *Hypochrysois*)
 - underside of hindwing without prominent red bands 3
3. - underside of hindwing with 1–2 dark sub-terminal or sub-marginal spots (Figure 4a) (may have additional obscure sub-marginal spots or a diminishing series of spots) 4
 - underside of hindwing with 4–6 black, sub-marginal spots (Figure 4b) **Group B** (various small ‘blues’)
 - underside of hindwing lacking a discrete series of dark sub-terminal or sub-marginal spots **Group C** (various small ‘blues’)
4. - underside of hindwing with two distinct small black spots near the leading edge (Figure 4c) **Group D** (pea-blues)
 - underside of hindwing lacking two distinct small black spots near the leading edge 5

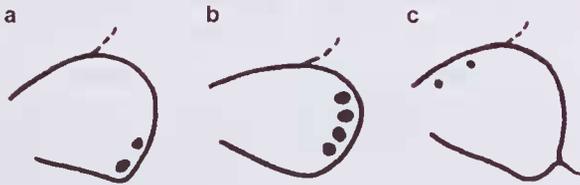


Figure 4. Markings of the hindwing underside of lycaenid butterflies: a. two sub-terminal spots; b. four sub-marginal spots; c. two spots near leading edge.

5. - hindwing with tail(s) absent or short (< 1 mm) (Figure 5a)
Group E (various small 'blues')
- hindwing with a single, long (> 1 mm) tail (Figure 5b)
Group F (various small 'blues')
- hindwing with two tails, either both long and delicate or one long and delicate and the other short, lobed and perpendicular to the plane of the hindwing (Figure 5c,d)
Group G (flashes)
6. - hindwing with at least one long, delicate tail (may also have lobed tail) (Figure 5c,d)
Group G (flashes)
- hindwing lacking a long and delicate tail (tails robust or absent) 7
7. - hindwing margin strongly wavy with a rounded, lobular tail (tornal lobe); hindwing may also have several pointed projections (Figure 5e)
Group H (azures, genus *Ogyris*)
- hindwing margin more or less rounded with a single broad, tapered tail (Figure 5f)
Group I (oak-blues, genus *Arhopala*)

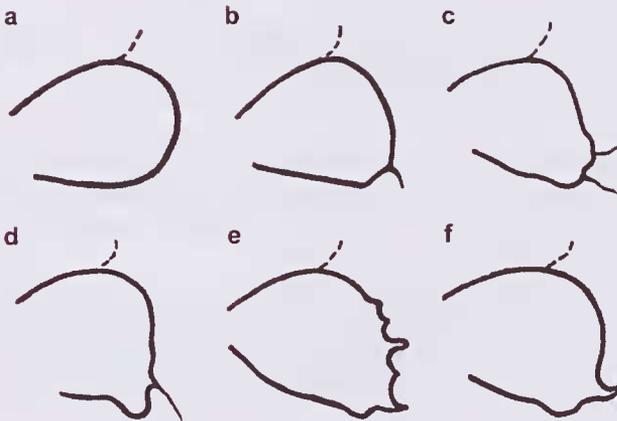


Figure 5. Features of the hindwing margin of lycaenid butterflies: a. rounded with no tail; b. rounded with a single, long, delicate tail; c. two long, delicate tails; d. one long tail and one lobed tail; e. wavy margin with projections; f. single broad tail.

Group A. Jewels (genus *Hypochrysoptera*)

- A1. - wings mostly blue or purple above; underside of forewing with a band of red spots toward the outer margin extending to the leading edge (species of woodland and open forest) **Fiery Jewel** *Hypochrysoptera ignita* (226)
 - wings mostly orange above; underside of forewing lacking a band of red spots (mangrove species) **Copper Jewel** *Hypochrysoptera apelles* (216)

Group B. Various small 'blues' (underside of hindwing with 4–6 prominent black sub-marginal spots)

- B1. - wings brown or purple above, brown below; very small butterflies (WS c. 14–17 mm, FWL c. 7–10 mm) **Jewelled Grass-blue** *Freyeria putli* (298)
 - wings whitish above; small butterflies (WS c. 24–25 mm, FWL c. 13–15 mm) (spotted opals, genus *Nesolycaena*) B2
- B2. - black lines (sex scales) present along the veins of forewing upperside; marginal band on upper forewing extending less than one third of the way along the leading edge (males) B3
 - black lines (sex scales) absent from veins of forewing upperside; marginal band on forewing upperside extending more than one third of the way along the leading edge (females) B4
- B3. - black lines (sex scales) on veins of forewing upperside fairly prominent and numerous male **Spotted Opal** *Nesolycaena urumelia* (268)
 - black lines (sex scales) on veins of forewing upperside rather obscure and less numerous male **Kimberley Spotted Opal** *Nesolycaena caesia* (268)
- B4. - dark marginal band on forewing upperside extending to the trailing edge female **Spotted Opal** *Nesolycaena urumelia* (268)
 - dark marginal band on forewing upperside not extending to the trailing edge female **Kimberley Spotted Opal** *Nesolycaena caesia* (268)

Note. Both spotted opals occur mainly on sandstone outcrops and/or on sandy soils where their larval food plants, shrubs of the genus *Boronia*, occur. The two species are not known to occur together, the Spotted Opal being recorded from near Darwin, east and south-eastwards to Queensland, and the Kimberley Spotted Opal only in WA. Any record from the Victoria River District of the NT should be evaluated with particular care. See Braby (1996, 2000) for more detail.

Group C. Various small 'blues' (no black sub-terminal or sub-marginal spots on underside of hindwing)

- C1. - hindwing tailed (known only from a few locations in the south Kimberley, WA) **Bitter-bush Blue** *Theclinessthes albocincta* (286)
 - hindwing rounded, without a tail C2
- C2. - underside of forewing with a pair of prominent dark spots near the outer edge (Figure 6a) (at rest, the spots may be concealed by the hindwing) C3
 - underside of forewing without a pair of prominent black spots near the outer edge, but may have a diminishing series of *c.* five smudged spots (Figure 6b) C4

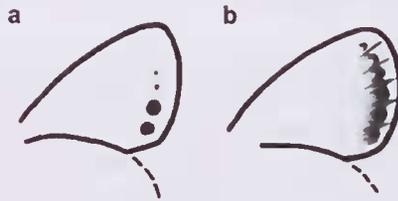


Figure 6. Diagnostic marks on the forewing underside of Dusky-blues: a. two prominent spots on the Twin Dusky-blue and Small Dusky-blue, with or without several smaller spots; b. the series of smudged spots of the Spotted Dusky-blue.

- C3. - WS *c.* 26–29 mm, FWL *c.* 14–18 mm; the faint line of spots beyond the middle of the hindwing underside curved (Figure 7a, evident only on fresh individuals) (known only from the Arnhem Land plateau) **Twin Dusky-blue** *Candalides geminus* (262)
 - WS *c.* 22–24 mm, FWL *c.* 10–13 mm; faint line of spots beyond the middle of the hindwing underside roughly straight (Figure 7b, evident only on fresh individuals) (widespread *) **Small Dusky-blue** *Candalides erinus* (262)

* The Small Dusky-blue is common much further inland in the NT than indicated by Braby (2000, 2004) – see Franklin *et al.* (2005).

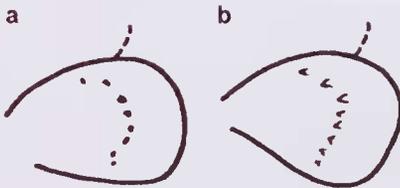


Figure 7. Diagnostic marks on the hindwing underside of: a. Twin Dusky-blue; b. Small Dusky-blue.

- C4. - arboreal species; WS 27–30 mm, FWL 14–18 mm; underside ground colour silvery white **Northern Pencil-blue** *Candalides gilberti* (258)
 - ground-layer species; WS 15–23 mm, FWL 8–14 mm; underside ground colour greyish-white, grey or grey-brown C5
- C5 - spots on underside of wings prominent, black, blackish or dark brown C6
 - spots on underside of wings obscure and pale brown (lawns and grassy savannas) **Common Grass-blue** *Zizina labradus* (300)
- C6. - outer edge of forewing underside with a series of prominent ‘smudged’ dots (Figure 6b) (sandstone areas, usually with spinifex) **Spotted Dusky-blue** *Candalides delospila* (264)
 - outer edge of forewing underside lacking a series of prominent smudged dots C7
- C7. - underside of forewing with no spots near the leading edge, but with one spot toward the base of the wing inward from the central ‘dash’ (= short, broad line) (Figure 8a) (WS \approx 20 mm, FWL \approx 9–12 mm) **Spotted Grass-blue** *Zizeeria karsandra* (300)
 - underside of forewing with two small dark spots near the leading edge more or less adjacent to the central ‘dash’, and no spot toward the base of the wing (Figure 8b) (WS \approx 15 mm, FWL \approx 8.5 mm) **Dainty Grass-blue** *Zizula bylax* (300)

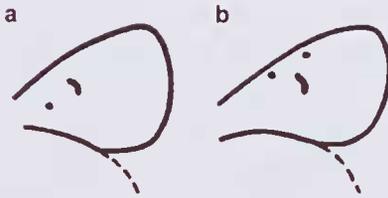


Figure 8. Diagnostic marks on the forewing underside of: a. Spotted Grass-blue; b. Dainty Grass-blue.

Group D. Pea-blues (underside of hindwing mostly with two black spots near the leading edge)

- D1. - underside of hindwing with two black spots near the leading edge (Figure 9a,b); wings grey-white or grey-brown below without prominent pale bands D2
 - underside of hindwing without black spots near the leading edge; underside of both wings fawn and with a prominent whitish band **Long-tailed Pea-blue** *Lampides boeticus* (294)

- D2. - the two sub-terminal black spots on the hindwing underside enclosed by a single, large orange patch **Orange-tipped Pea-blue** *Everes lacturnus* (294)
 - the two sub-terminal black spots on the hindwing underside not enclosed by a single, large orange patch, though spots may be individually edged with orange D3

- D3. - tail short; sub-terminal spots on underside of hindwing of about equal size; one black spot near the mid-base of the hindwing underside (Figure 9a) **Spotted Pea-blue** *Euchrysope cnejus* (294)
 - tail long and delicate; one sub-terminal spot on the hindwing underside markedly larger than the other; no black spot near mid-base of hindwing underside (Figure 9b) (wings often strikingly pale grey-blue above) **Pale Pea-blue** *Catochrysope panormus* (292)

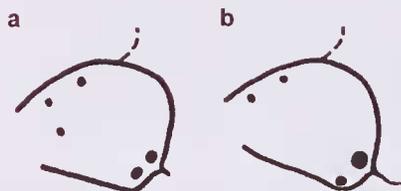


Figure 9. Diagnostic marks on the hindwing underside, and tail of: a. Spotted Pea-blue; b. Pale Pea-blue.

Group E. Various small 'blues' (hindwing with 1–2 black sub-terminal spots on the underside; hindwing tail absent or < 1 mm long; hindwing underside lacking two black spots near the leading edge)

- E1. - sub-terminal spot(s) on underside of hindwing inset with iridescent green scales E2
 - sub-terminal spot(s) lacking iridescent scales (iridescent scales may be lost with age; check carefully with hand lens before assuming absence) E4
- E2. - underside of wings an irregular mosaic of brown and white markings; WS 22–23 mm, FWL 12–14 mm (known only from vine-thickets in Kakadu National Park, NT) **Plumbago Blue** *Leptotes plinius* (288)
 - underside of wings with brown and white bars; WS 17–19 mm, FWL 9–11 mm E3
- E3. - two roughly equal-sized sub-terminal spots on underside of hindwing **Two-spotted Line-blue** *Nacaduba biocellata* (274)
 - one prominent sub-terminal spot on the underside of hindwing; a second, inner spot is smaller and obscure **Purple Line-blue** *Prosotas dubiosa* (276)

E10. - underside of hindwings brown but heavily barred so that much of the base colouration is obscured; bands with heavy white edging; hindwing with a short, broad tail (may be obscure); upperside of forewing with a checkered brown-and-white fringe (coastal salt-marshes)

Sapphire Blue *Theclinesstes sulphitius* (288)

- underside of hindwings grey-brown or pale brown with scattered barring that covers < 50% of the wing area; bands delicately edged with white; hindwing without a tail; upperside of forewing lacking a checkered fringe (known only from the upper Adelaide River area, NT, but may be more widespread) (ant-blues, genus *Acrodipsas*)

E11

E11. - upperside of wings with blue panels

female **Small Ant-blue** *Acrodipsas myrmecophila* (208)

- upperside of wings brown or sooty black above with at most scattered blue scales

E12

E12. - foreleg and hindleg femur swollen; mid-leg tibia shorter than the adjacent tarsal segment *

Northern Ant-blue *Acrodipsas decima* **

- femur not swollen; mid-leg tibia longer than the adjacent tarsal segment *

male **Small Ant-blue** *Acrodipsas myrmecophila* (208)

Note. Identification of these two species may require microscopic examination. See Sands (1979) for illustration of leg structure in *Acrodipsas*.

* 'tarsal segment' – the fifth and most distal segment of the leg (see Figure 3 in Braby 2000).

** For more information on this recently-described species, see Miller and Lane (2004).

Group F. Various small 'blues' (tailed and with sub-terminal spots on the hindwing underside)

F1. - wings with well-defined white or whitish bands > 1 mm wide on the underside of the forewing

F2

- wings lacking well-defined white or whitish bands on the underside of the forewing, but may have a whitish suffusion or fine white lines much < 1 mm wide

F4

F2. - underside of forewing with a prominent dark brown band towards the outer edge and framed with white; tail slender with a broad base;

WS 19 mm, FWL 10–11 mm **Glistening Line-blue** *Sabulana scintillata* (280)

- underside of forewing without a prominent dark brown band framed with white; tail entirely slender; WS 23–27 mm, FWL 12–16 mm

F3

- F3. - white or whitish bands on the underside of wings central and > 3 mm broad
White-banded Line-blue *Nacaduba kurava* (274*)
 - white or whitish bands on the underside of wings towards the outer margin and < 3 mm broad
Long-tailed Pea-blue *Lampides boeticus* (294)

* Note that the local subspecies *felsina* is not illustrated in Braby (2000, 2004) and lacks the very broad band of the illustrated female (non-local) subspecies *parma*.

- F4. - underside of forewing with two short white-edged brown inner bands and a long outer band (Figure 11a,b), bands distinctly darker than the ground colour (hindwing underside often with a whitish suffusion toward the outer edge) F5
 - underside of forewing with one short white-edged inner brown band and a broken, longer outer band (Figure 11c) (the bands on underside of wings not or scarcely darker than the ground colour and thus rather indistinct such that, at first examination, the wings may appear to be brown with narrow white bands) (hindwing underside lacking a whitish suffusion)
Purple Cerulean *Jamides phaseli* (292)

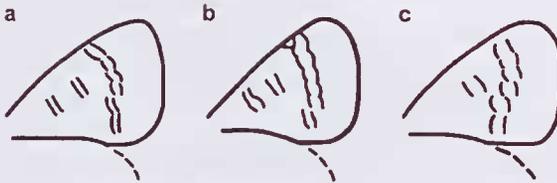


Figure 11. Diagnostic barring on the forewing underside of: a. Speckled Line-blue; b. Wattle Blue and Bitter-bush Blue; c. Purple Cerulean.

- F5. - band toward the outer margin on underside of forewing distinctly curved inward at the leading edge (Figure 11a)
Speckled Line-blue *Catopyrops florinda* (278)
 - band toward the outer margin on underside of forewing more or less straight or only slightly curved inward (Figure 11b) F6
 F6. - sub-terminal spots on the hindwing underside prominent
Wattle Blue *Theclinessthes miskini* (284)
 - sub-terminal spots on the hindwing underside small or indistinct (known only from a few locations in the south Kimberley, WA)
Bitter-bush Blue *Theclinessthes albocincta* (286)

Group G. Flashes

- G1. - hindwing with two long, delicate tails (Figure 5c); ground colour of underside of wings pale grey with an obscure long, narrow bar
Black-spotted Flash *Hypolycaena phorbas* (252)
- hindwing with one long, delicate tail (Figure 5d); ground colour of underside of wings grey-brown (sometimes tinged purple), with a number of prominent, short, broad bars
Princess Flash *Deudorix smilis* (254)

Group H. Azures (genus *Ogyris*)

- H1. - projections on the hindwing margin rounded and mostly broader than long; WS 32–39 mm, FWL 18–22 mm H2
- at least one of the projections on the hindwing margin strongly elongated and tail-like; WS 42–47 mm, FWL 24–28 mm
Northern Purple Azure *Ogyris zosime* (240)
- H2. - ground colour of underside of hindwing pale honey-brown; black bars on underside of forewing edged with iridescent blue on a brown or yellowish background (rare; known only from Darwin area and Tiwi Islands, NT)
Orange-tipped (Dodd's) Azure *Ogyris iphis* (238)
- ground colour of underside of hindwing brown, grey-brown or whitish-brown; bars on the underside of forewing pale iridescent blue on a black background, or alternating dark and white H3
- H3. - dark outer band on underside of forewing roughly straight (Figure 12a); antennal club thickened
Silky Azure *Ogyris oroetes* (236)
- dark outer band on underside of forewing displaced in middle (Figure 12b) (female has two broad orange bands near base of forewing underside); antennal club slender
Satin Azure *Ogyris amaryllis* (234)

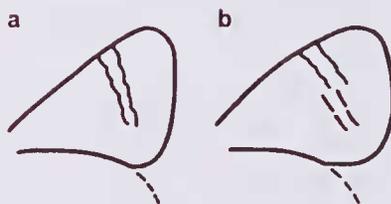


Figure 12. Diagnostic dark bars on the forewing underside of: a. Silky Azure; b. Satin Azure.

Group I. Oak-blues (genus *Arhopala*)

11. - underside of wings dark chocolate brown or dark purple-brown; upperside of wings deep iridescent blue with dark margin
Shining Oak-blue *Arhopala micale* (232)
- underside of wings pale brown or grey (tinged purple in males); upperside of wings purple (with dark margin in female)
Purple Oak-blue *Arhopala eupolis* (232)

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Features of lycaenids: (a) blue above (Wattle Blue *Theclinesthes miskini*); (b) red bands (Copper Jewel *Hypochrysops apelles*); (c) marginal spots on hindwing (Spotted Opal *Nesoalycaena urumelia*); (d) marginal spots on forewing (Small Dusky-blue *Candalides erinus*); (e) sub-terminal spots on hindwing, tail on each hindwing (Wattle Blue); (f) two tails on each hindwing (Black-spotted Flash *Hypolycaena phorbas*). (a. D. Franklin; b,c,f. M. Braby; d. D. Bisa; e. G. Brown)